

We claim:

1. A method suitable for fumigating a large enclosed volume and contents requiring fumigation and restoring habitability, comprising the steps of:
  - 5 climatizing a volume requiring fumigation containing contents;  
generating chlorine dioxide gas;  
introducing the chlorine dioxide gas into the volume requiring fumigation;  
distributing the introduced chlorine dioxide gas in the volume requiring  
fumigation;
  - 10 maintaining a residual amount of the chlorine dioxide gas within the volume requiring fumigation under environmentally safe conditions at a level and duration permitting gaseous penetration of included contents as required for decontamination; and  
removing the chlorine dioxide gas from the volume requiring fumigation, thereby fumigating the large enclosed volume and contents and restoring habitability.
- 15 2. The method of claim 1 wherein the chlorine dioxide gas is removed from the volume requiring fumigation with the same equipment that was used to introduce the chlorine dioxide gas.
3. The method of claim 1 wherein the chlorine dioxide gas is generated as a solution of chlorine dioxide gas in a liquid.
- 20 4. The method of claim 3 wherein the liquid is water.
5. The method of claim 1 wherein the chlorine dioxide gas is introduced using an emitter.
6. The method of claim 5 wherein the emitter is a stripper.
7. The method of claim 1 wherein the step of climatizing the volume  
25 requiring fumigation includes the step of adjusting the relative humidity.
8. The method of claim 1 wherein the step of climatizing the volume requiring fumigation includes the step of adjusting the temperature.
9. The method of claim 1 wherein the step of climatizing the volume requiring fumigation includes the step of avoiding exceeding the dew point.
- 30 10. The method of claim 1 wherein the step of climatizing the volume requiring fumigation includes the step of reducing the level of illumination.

11. The method of claim 1 wherein the volume requiring fumigation is a portion of a building.

12. The method of claim 1 wherein the volume requiring fumigation is a vehicle.

5 13. The method of claim 1 wherein the step distributing the introduced chlorine dioxide gas comprises using a heating ventilation and air conditioning (HVAC) system.

14. The method of claim 1 wherein the volume requiring fumigation is maintained substantially dark.

10 15. The method of claim 1 wherein the chlorine dioxide gas is present in the introduced gas at a concentration of at least 90%.

16. The method of claim 1 wherein the chlorine dioxide gas is present in the introduced gas at a concentration of at least 95%.

15 17. The method of claim 1 wherein the chlorine dioxide gas is present in the introduced gas at a concentration of at least 99%.

18. The method of claim 1 wherein the same apparatus is used to climatize the volume requiring fumigation and to introduce the chlorine dioxide gas into the volume requiring fumigation.